

The Examiner has required restriction to one of the following inventions is required under 35 U.S.C. § 121:

- I. Claims 1-8, now Claims 10-16, drawn to a process for preparing a crosslinked polyolefin foam, classified in class 264, subclass 45.8.
- II. Claim 9, now Claim 17, drawn to a compliant crosslinked foam, classified in class 428, subclass 158.

Applicants affirm the election of Claims 1-8, now Claims 10-16 for prosecution in this case, such election have been made with traverse.

Claim 9, now corresponding to Claim 17, stands withdrawn from further consideration as not reading on the elected invention.

As so stated by the Examiner, he will consider rejoinder of the non-elected claim upon allowance of the elected claims. Such is herewith requested.

Claims 1-3 and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hitchcock.

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Hitchcock in view of Hooper et al.

Claims 1-4 and 6 further stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper et al in view of Hitchcock.

Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over Hitchcock in view of Hooper, or Hooper et al in view of Hitchcock, both combinations further in view of Bertsch.

The interview kindly granted by the Examiner, Mr. Goff, also attended by Supervisory Primary Examiner Mr. Ball, on May 14, 2002 is herewith acknowledged with appreciation. It served to materially advance the prosecution of the case clarifying the issue.

For reasons as urged at said interview, set forth and further elaborated upon below, and in view of the amendment to the claims, the Examiner stated that he will reconsider his position.

The invention relates to a process for preparing a sheet of a crosslinked polyolefin foam expanded in an essentially unidirectional expansion only in its thickness, comprising either:

a) adhering a support to one or both faces of a crosslinked intermediate polyolefin sheet to be expanded, these faces being perpendicular to the direction of expansion, and unidirectionally expanding the so formed sheet only in its thickness, or

b) surface-crosslinking one or both faces of an intermediate polyolefin sheet to be expanded, these faces being perpendicular to the direction of expansion, and expanding and crosslinking the so formed sheet only in its thickness.

The claimed process obviates problems associated with prior art procedures and resulting in a foamed product of superior properties, as so shown by the examples in the case. Specifically, by blocking lateral expansion of the foam during its expansion, unidirectional expansion only in its thickness is permitted. This is accomplished by either embodiment a) or embodiment b), as defined in the claims. These embodiments manifestly are not obvious.

More particularly, Hitchcock relates to the preparation of a foamed thermoplastic resin sheet by conveying a radiation crosslinked, plastic resin sheet in a horizontally supported state while applying uniform tension to the leading edge the width of the foamed sheet. In other words, while freely permitting expansion in the thickness of the sheet, expansion is also effected in the lateral direction, i.e., the foamed sheet having a substantially uniform orientation across the sheet. No unidirectional expansion only in the thickness of the sheet thus is present in the sheet of Hitchcock.

The Examiner at the interview referred to, col. 1, lines 23-27 of Hitchcock as assertedly being relevant. This section of Hitchcock reads as follows:

One particular type of foam which has to be expanded in relatively thin films is radiation cross-linked polyolefin or polyolefin copolymer foam. Radiation is an effective cross linker only up to thicknesses of about ¼ of an inch.

However, even if such a radiation crosslinked polyolefin were to be used in the process of Hitchcock, tension would be applied to the sheet thus expanding it also in the lateral direction, not unidirectional only in its thickness. It is also to be pointed out that the surface of the endless belt in Hitchcock is treated to have good releasability so that these sheets will not stick to the belt. Note, column 3, lines 9-11.

With regard to Hooper et al, preliminarily, it is pointed out that it does not relate to the preparation of a crosslinked polyolefin, the nature of the plastic foam not being disclosed. Moreover, and in any event, in its horizontally extending conveyers which form a support for the foam material during expansion and solidification thereof, the thickness of the panel is determined by the vertical spacing between adjacent rounds of the respective conveyers and the panel width is determined by spaced apart longitudinally extending side plates which, together with the upper and lower conveyer runs define the cross-sectional dimension of the insulation panel. In other words, no blocking of these surfaces is involved therein. The facing material is paid out from its source to become a covering, but does not prevent expansion in any way of the plastic to be foamed. It is not seen that unidirectional expansion only in thickness is present in this reference, the surfaces not acting to constrain expansion.

Accordingly, neither of these references, nor their combination, make obvious or suggest unidirectional expansion of a sheet only in its thickness.

Bertsch is relied upon only for asserted obviousness of an additional feature as defined by Claim 5, now Claim 14. As such, it manifestly does not cure basic deficiencies of the other references, for reasons as pointed out above.

Consequently, withdrawal of the rejection of the claims under 35 U.S.C. § 103 is requested.

With regard to the rejection of Claims 1 and 2 under the second paragraph of 35 U.S.C. § 112, the claims, as now submitted, clearly are not subject to this rejection, the inventive steps now being particularly defined.

Withdrawal of the rejection of the claims under the second paragraph of 35 U.S.C. § 112 thus is requested.

It is pointed out that the specification already has been amended to make a specific reference to the prior application in its first sentence. Note the "Utility patent application transmittal" accompanying the filing of this application. The Examiner at said interview agreed this to be the case.

It is submitted that this application is now in condition for allowance and which is solicited.

Respectfully submitted,

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IN THE SPECIFICATION

The Examiner informed the undersigned that due to pages 1-6 of the specification having holes punched through them at the top, the following sections of these pages are herewith reproduced and read as follows:

Page 1, the title reads as follows:

PROCESS FOR PREPARING A CROSSLINKED POLYOLEFIN FOAM

Page 2, lines 1-16 read as follows:

Moreover the expansion of crosslinked polyolefin foams occurs in three dimensions.

It is important for the degree of crosslinking of the resin both at the start of the expansion and throughout its duration to be carefully controlled; the initial content of the compositions in terms of blowing agent and of crosslinking agent (in the case of chemical crosslinking) is, of course, tailored to this effect, as are the durations and temperatures of the heat treatments. However, whatever the operating conditions thus selected, the product is in the liquid-solid transition state during the combined crosslinking and expansion; it is tacky, difficult to handle or even runny, in which case it is liable to conform to the surface of the oven against which it rests by adhering thereto, free expansion then being prevented, which, finally, is to the detriment of the surface appearance of the product obtained (presence of irregularities in streaks, wrinkles, etc.).

Page 2, line 37 to page 3, line 9 read as follows:

However, a third approach is more frequent than the first two. This is the approach of the Hitachi and Furukawa processes, using a horizontal oven having three zones of gradual heating. In the three zones, the operations of precrosslinking/conditioning to a temperature below the decomposition temperature of the blowing agents of a first expansion phase at a moderate temperature and then of a second phase for completing the expansion at a higher temperature are carried out, respectively. In order to prevent the relatively tacky intermediate product from adhering to its support so as subsequently to disturb the development of the expansion, this support possibly consists, in places, of air cushions.

Page 3, line 38 to page 4, line 10 read as follows:

According to another advantageous characteristic with a view to an industrial production operation, the process is carried out continuously, the preferred case of the abovementioned sheet, the latter then consists of a continuous web. This web comes from a wound roll or consists of an extruded product. A horizontal oven is then preferably used, especially of the type having three zones (the Hitachi and Furukawa processes mentioned above), generally in simplified versions without air cushions. This is because, as explained in detail below, the invention solves, to a large extent and in another manner, the problem of the product to be expanded adhering to the surface of the oven.

Page 5, lines 1-5 read as follows:

At a given moment before the expansion, the product is usually in a tacky, or even runny, state, especially due to the effect of an increase in temperature. The adhesion of the support to one face of the intermediate product then simply results by applying one against the other.

Page 6, lines 1-4 read as follows:

The use of one support results in denser foams than that having two supports. This is because the blowing gas is capable of escaping via the free surface of the product, that is to say the unsupported surface.

IN THE CLAIMS

--Claims 1-9 (Canceled).

Claims 10-17 (New).--